Computing

Infocomm Security Management
Information Technology
Common Infocomm Technology Programme

UBISOFT

U+SP

SINGAPORE
POLYTECHNIC

Think bigger with SP

Singtel
1 SERANGOON NORTH AVE
You dream of transforming the world into a better place. Or of making the cyberspace a safer place. You dream of harnessing technology to make a difference to people’s lives. You want to build software applications like Instagram and Carousell to connect communities. You want to create revolutionary AI applications with voice and image recognition features to improve lives. You want to be a cyber-defender.

If these are your dreams, the School of Computing (SoC) can help turn your Dreams into Reality through the following IT diploma programmes:

- Common Infocomm Technology Programme (CITP) (S32)
- Diploma in Infocomm Security Management (DISM)(S54)
- Diploma in Information Technology (DIT)(S69) with specialisations/tracks in:
  - Software & Applications specialisation
    - Software Development Specialist track
    - User Experience (UX) Designer track
  - Data Science & Digital Analytics specialisation

An IT curriculum that builds strong foundation and deep skills
Lay a strong foundation in coding and learn-to-learn by building complete end-to-end web-mobile applications. Develop the dexterity to go deep in your chosen field of study, from cyber security, software development and user experience design to AI & data science/digital analytics.

Innovative Teaching Approaches & Learning Spaces
Hone your cyber defence skills through scenario-based simulated cyber-attacks at SP’s Cyber Wargame Centre and work on live social media projects at our Social Media Listening Centre.

Immersive Real World Learning
Pit your skills against the best in competitions, join meet-ups to find like-minded fellows and earn industry certifications.

Get real-life work experience through our 22 weeks of internship and develop solutions to real-world problems though SP’s SMART Campus, Data Science and Analytics Centre, Interactive Experience Technology Centre, and more.

Come. Journey with us. Turn your Dreams into Reality!

WHY SoC?

I CAN REALISE MY DREAMS

You dream of transforming the world into a better place. Or of making the cyberspace a safer place. You dream of harnessing technology to make a difference to people’s lives. You want to build software applications like Instagram and Carousell to connect communities. You want to create revolutionary AI applications with voice and image recognition features to improve lives. You want to be a cyber-defender.

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    - Software Development Specialist track
    - User Experience (UX) Designer track
  - Data Science & Digital Analytics specialisation
COURSE HIGHLIGHTS

The programme offers:

• fundamental IT modules to give you an insight into what interests you.
• common foundational modules and comprehensive exposure to various areas of IT through the Infocomm Professional Seminars.
• curriculum which includes IT career guidance to prepare graduates for upcoming trends in IT sectors industry.

ENTRY REQUIREMENTS

2018 JAE ELR2B2: -
Aggregate Type: ELR2B2-C

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language</td>
<td>1 - 7</td>
</tr>
<tr>
<td>Mathematics (Elementary / Additional)</td>
<td>1 - 6</td>
</tr>
<tr>
<td>Any two other subjects</td>
<td>1 - 6</td>
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</tbody>
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Note: To be eligible for admission, you must also have sat for one of the following subjects:

• Biology
• Biotechnology
• Chemistry
• Computing / Computer Studies
• Creative 3D Animation
• Design & Technology
• Electronics / Fundamentals of Electronics
• Food & Nutrition
• Physics
• Science (Chemistry, Biology)
• Science (Physics, Biology)
• Science (Physics, Chemistry)
COURSE MODULES

The common first semester will lay the foundation for programming and computing for both Diploma in Infocomm Security Management (DISM) and Diploma in Information Technology (DIT) courses.

This program will allow you to have more time to explore your interests in the first semester and make an informed decision on preferred IT-related course to pursue later.

Through the Education & Career Guidance activities, you will then learn to develop your portfolios and gain insights into the respective job roles and industries in the IT sectors.

FIRST YEAR (SEMESTER 1)

• Communicating for Project (Proposal) Effectiveness
• Critical & Analytical Thinking
• Education and Career Guidance 1
• Front-End Web Development
• Fundamentals of Programming
• Fundamentals of Computing
• Mathematics

YEAR 1

SEMESTER 1

Common Infocomm Technology Programme (CITP) (S32)

YEAR 2

Diploma in Infocomm Security Management (DISM) (S54)

YEAR 3

Diploma in Information Technology (DIT) (S69)

FURTHER STUDIES

You can pursue an IT degree programme at a local or foreign university.

CAREER OPTIONS

To be streamed to either DISM or DIT course after one semester in SP.
Anonymous hackers are attempting to gain access to classified information on a computer system and you need to stop them from carrying out this malicious attack. At the Cyber Wargame Centre, we create such realistic scenarios to prepare you for the REAL cyberthreats!

Technology is ever-present in our everyday activities, the need to guard against cyber threats is more critical than ever before.
COURSE MODULES

The Diploma in Infocomm Security Management is a three-year full-time programme.

**FIRST YEAR**
- Applied Cryptography
- Communicating for Project (Proposal) Effectiveness
- Computer Law and Investigation
- Critical & Analytical Thinking
- Education and Career Guidance 1
- Front-End Web Development
- Fundamentals of Computing
- Fundamentals of Programming
- Infocomm Security
- Linux Administration and Security
- Narrative Thinking
- Network Fundamentals
- Mathematics
- Programming in Python and C

**SECOND YEAR**
- Back-End Web Development
- Communicating for Professional Effectiveness
- Digital Forensics and Investigation
- Design Thinking for Social Innovation
- Education and Career Guidance 2
- Elective 1
- Elective 2
- Ethical Hacking and Defences
- Secure Coding
- Securing Microsoft Windows
- Security Policy and Incident Management

**THIRD YEAR**
- Elective 3
- Infocomm Professional Seminar
- InfoSec Project Development and Management
- Internship Programme
- Malware Reverse Engineering

**FURTHER STUDIES**
You can pursue further studies at local or foreign universities, with the latter granting direct entry into the second or third year of related undergraduate programmes in countries such as Australia, United Kingdom and the United States.

**CAREER OPTIONS**
- Associate Security Analyst / Consultant
- Incident Investigator / Forensic Investigator
- Security / Systems Administrator
- Cyber Risk Analyst
- IT Auditor
- Security Engineer
- Applications Developer with IT security solution providers, auditing and consultancy firms, banking and financial institutions, public and private organisations that require IT security services.

**Daniel Ho**
Class of 2016, DISM Gold Medalist, recipient of the Lee Kuan Yew Award 2016, and currently a Public Service Commission scholarship holder.
DIPLOMA IN INFORMATION TECHNOLOGY

CREATE A SMART NATION WITH US

Information Technology (IT) is the driving force behind many digital transformations we see and use today, including the Smart Nation vision in Singapore. There continues to be a strong demand for IT professionals in Software Development and User Experience (UX) design, and in frontier technologies such as Artificial Intelligence & Data Science / Analytics and Internet of Things.

FLEXIBLE COURSE OF STUDY

Choose any one of the three most in-demand areas of IT to focus on.
- Software & Applications - Software Development Specialist
- Software & Applications - User Experience (UX) Design
- Data Science and Digital Analytics

AWESOME OPPORTUNITIES

We open doors for you to work with leading industry companies such as Microsoft, Accenture, GovTech, CrimsonLogic, KPMG, Singtel and Ubisoft Singapore through internship opportunities and project collaborations.

GET A HEAD START FOR LOCAL UNIVERSITIES

DIT offers an Advanced Math programme that will prepare you for your university programme. Moreover, you can pursue either an IT-related degree in both local and overseas universities with advanced standing.

DATA SCIENCE AND ANALYTICS CENTRE (DSAC)

DIT is supported by DSAC, a SP leading centre in applied data science and analytics for innovation, solutioning and training, where you get to work on clients’ projects.

SCHOLARSHIPS

- Centre for Strategic Infocomm Technologies (CSIT) Diploma Scholarship
- Infocomm Polytechnic (iPoly) Scholarship
- Industry Preparation for Pre-graduate (iPREP) Programme
- Singapore Polytechnic (SP) Scholarship

ENTRY REQUIREMENTS

2018 JAE ELR2B2: 13
Aggregate Type: ELR2B2-C

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- Electronics / Fundamentals of Electronics
- Food & Nutrition
- Physics
- Science (Chemistry, Biology)
- Science (Physics, Biology)
- Science (Physics, Chemistry)
FURTHER STUDIES
Quench your thirst for knowledge at local or foreign universities! Our graduates may receive module exemptions or advanced standings with relevant courses offered locally at NUS, NTU, SIT, SUTD and SMU. You can also gain direct entry into the second or third year of study in relevant undergraduate degree courses in countries including Australia, and the United Kingdom.

CAREER OPTIONS
• Analyst Programmer
• Applications Developer
• Business Analyst
• Data Analyst / Engineer
• Data Structures & Algorithms
• Deep Learning
• Design Thinking for Social Innovation
• DevOps & Automation for AI
• Electives
• Full Stack Web Development Project
• Internship Programme
• Mathematics for AI

I’ve always had a passion for IT, and being able to study the subject I loved made the journey fun and engaging. In DIT, I was taught solid skills and was mentored by lecturers who went above and beyond. My achievements are not my own, but a culmination of the guidance and work put in by the lecturers.

Azeem Arshad Vasanwala
Class of 2017, Tan Chin Chye Gold Medalist Institution Award, IMDA Gold Medallist, Microsoft Imagine Cup 2016 Winner, Singapore Computer Society IT Youth 2017 Finalist Award

FURTHER STUDIES
All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 (15 hours).

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL modules as an elective.

Electives
The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

For a list of electives offered, please visit www.sp.edu.sg

User Experience (UX) Design
• Digital Visual Design
• Infographics
• User Interface Design

Software Development
• AI & Machine Learning
• Communicating for Professional Effectiveness
• Data Engineering
• Data Structures & Algorithms
• Deep Learning
• Design Thinking for Social Innovation
• DevOps & Automation for AI
• Education and Career Guidance 2
• Elective 2
• Full Stack Web Development Project
• Mathematics for AI

Data Science & Digital Analytics Specialization
• Back-End Web Development
• Data Visualization
• Elective 1
• Narrative Thinking
• Programming for Data Science
• Statistics for Data Science

SOFTWARE & APPLICATIONS SPECIALIZATION
• Back-End Web Development
• Design for User Interaction
• Narrative Thinking
• Mobile Application Development
• 1 Specialist Elective

Specialist Electives
• AI & Machine Learning
• Communicating for Professional Effectiveness
• Data Engineering
• Data Structures & Algorithms
• Deep Learning
• Design Thinking for Social Innovation
• DevOps & Automation for AI
• Education and Career Guidance 1
• Elective 1
• Full Stack Web Development Project
• Mathematics for AI

Specialist Electives
• Back-End Web Development
• Data Visualisation
• Infographics
• User Interface Design

COURSE MODULES
The Diploma in Information Technology is a three-year full-time programme.

FIRST YEAR
• Communicating for Project (Proposal) Effectiveness
• Critical & Analytical Thinking
• Education and Career Guidance 1
• Front-End Web Development
• Fundamentals of Computing
• Fundamentals of Programming
• Mathematics

SECOND YEAR
• Application Development Studio
• Communicating for Professional Effectiveness
• Data Engineering
• Design Thinking for Social Innovation
• Education and Career Guidance 2
• Elective 1
• Enterprise Systems Development
• Software Engineering Practice
• 2 Specialist Electives

THIRD YEAR
• Effective 2
• Infocomm Professional Seminar
• Internship Programme
• Software Application Project

• Data Science & Digital Analytics Project
• Infocomm Professional Seminar
• Internship Programme

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For a list of electives offered, please visit www.sp.edu.sg
A former Technology Consultant (Information Security) at PricewaterhouseCoopers LLP, Daniel now performs penetration testing for Centurion Information Security Pte Ltd. Having attained a staggering seven professional certifications by the end of his final year at SP, Daniel continued to excel at the Queensland University of Technology, Australia where he was placed on the Dean’s List for Excellent Academic Performance and was awarded the Science and Engineering Faculty International Merit Scholarship.

MOHAMAD DANIEL BIN HAMID
Senior Consultant, Centurion Information Security Pte Ltd
DISM CLASS OF 2009

Edward is part of the team which is responsible for the training and development of Home Team officers as well as Home Team partner agencies in cyber security competencies. He is a Certified Ethical Hacker (CEH) and his final year project team clinched the SPInnovex Gold Award in Singapore Polytechnic. Edward graduated with a Bachelor of Engineering (Computer Science) at Nanyang Technological University in 2015. He co-authored a paper, on his NTU project that was awarded the title of Interesting FYP, published at the 6th Annual International Conference on Computer Science Education: Innovation & Technology (CSEIT 2015).

HENG AIK HWANG EDWARD
Senior Executive, Centre of Cyber Security Studies, Home Team Academy
DISM CLASS OF 2010

Emil works on the Critical Information Infrastructure Protection (CIIP) cybersecurity governance and practice programme in IMDA — ensuring the cybersecurity and assurance of Singapore’s Infocomm Media (ICM) sector. He received the National Infocomm Scholarship (NIS) in 2009 to pursue a Bachelor of Science in Computer Science and Master of Science in Information Security at Royal Holloway, University of London.

Emil is the founder and lead of Division Zero (Div0), a cybersecurity community group, and a Chapter Lead of Singapore’s Honeynet Project, an international non-profit research organisation dedicated to improving Internet security. In recognition of his contributions to Singapore’s cybersecurity ecosystem, he was awarded the Cybersecurity Awards 2018 (Professional category).

EMIL TAN
Assistant Manager, Infocomm Media Development Authority (IMDA)
DISM CLASS OF 2009

Yi Bing is part of the offensive security team ensuring a high level of security for DBS Bank applications through penetration tests and application security assessments.

CHIN YI BING
Cyber Security Executive, DBS Bank
DISM CLASS OF 2016
As a Technical Director, Ikhwan manages workflow, server back end structure and multi-platform toolsets. He has released five games across different consoles and platforms: Tobe’s Vertical Adventure, Tobe’s Hookshot Adventure, Tiny Dice Dungeon, The Last Vikings, and most recently, ArmaGallant, on the PlayStation Store. During his time in SP, Ikhwan was a Microsoft StudentPartner and was awarded the Director’s Honour Roll three times.

MUHAMMAD IKHWAN BIN ZAINAL  
Technical Director, Rock Nano Global Pte Ltd  
DIT CLASS OF 2009

As a Partner Technology Manager, Xiaoran helps partners overcome scaling and operational challenges and project-manage the partner onboarding implementation. He obtained a Bachelor Degree in Computing, Information Technology (with Distinction) from University of Wollongong, Australia in July 2012.

CHANG XIAORAN  
Partner Technology Manager, Google Asia Pacific  
DIT CLASS OF 2010

Junjie manages a design team and was part of the Assassin’s Creed Designer Team that shipped high-quality AAA Games such as Assassin’s Creed 3, AC: Syndicate, AC: Black Flag and AC: Rogue to 20 million players worldwide. As Associate Lead Designer, he sets the benchmark of in-game level layout and reviews the works of other designers at different stages of the game development.

LIN JUNJIE  
Lead Designer, Ubisoft Singapore  
DIT CLASS OF 2007

Victor leads the engineering team at Carousell to build and scale backend systems from Singapore to worldwide. He grew the engineering team from two to its present size of more than 30.

He obtained a Bachelor of Engineering (Computer Science) from Nanyang Technological University in 2013. He was awarded the DSO-URECA Research Award for NTU-DSO’s undergraduate research programme. Victor was the organiser for PyCon Singapore 2014 and 2015.

VICTOR NEO  
Senior Engineering Manager, Carousell  
DIT CLASS OF 2008
Singapore Polytechnic
500 Dover Road Singapore 139651

For more information regarding entry requirements and course information, please contact:

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Fax: (65) 6779 7912
Email: contactus@sp.edu.sg
Website: www.sp.edu.sg/soc

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The polytechnic reserves the right to alter the information in this publication. Information is correct as of 1 January 2019.